Fiscal Inflation in 1933

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Next Steps for the Fiscal Theory of the Price Level

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Introduction

- Role of fiscal financing in the Great Depression
- Was an unbacked fiscal expansion behind the 1933 recovery in the United States?
- Previous work emphasizes regime change associated with Roosevelt
  - Leaving the gold standard brought on a large depreciation in the dollar, stimulating exports and demand (Temin and Wigmore).
  - But France and the UK had similar devaluations without the boom. What was different about the US?
- We argue that leaving gold was a necessary condition
  - Converted effectively real government debt into nominal debt
  - Not sufficient because policy could have opted to aggressively target inflation and adjust surpluses to stabilize debt \( \Rightarrow \) tepid recovery
  - Instead, monetary policy pegged the nominal interest rate
- Contribution: fiscal sustainability and fiscal stimulus need not be in conflict
  - Roosevelt convinced people that fiscal expansion would not be followed by fiscal contraction
U.S. Inflation

Index, 1957-1959=100. Sources: BEA & BLS from NBER Macrohistory Database, Eggertsson (2008)

Fiscal Inflation in 1933
Real GDP in trillions of 2009 dollars. Industrial production, 2012=100. Sources: Measuring Worth, Federal Reserve Board.
Monetary Policy

- In 1933, the Fed was not adjusting interest rates in response to the price level.
- Friedman & Schwartz (1963): recovery in the spring of 1933
  “owed nothing to monetary expansion”
- Pegged interest rates laid groundwork for unbacked fiscal expansion by pushing all revaluation of government debt into the short run, producing higher inflation and lower real interest rates.
U.S. Short Term Interest Rates and Monetary Aggregates

Fiscal Policy

- Unbacked fiscal expansion: expansion in nominal government debt not associated with a belief that the present value of primary surpluses will rise by an amount equal to the value of the increase in debt, evaluated at the pre-expansion prices.

- Roosevelt touted the evils of deficits
  - Balanced the “regular” budget
  - Ran deficits on “emergency budget”
  - Vague promises to finance emergency spending in the future
  - Kept focus on the need to raise prices
  - Deficits were widely perceived as inflationary, particularly by bankers

- Fiscal rule: surplus in normal times, deficits in emergencies to re-inflate. Roosevelt seemed committed to running budget deficits financed by nominal debt issuance until the price level rose.

- Nominal debt growth without the expectation of higher taxes induces substitution out of bonds and into goods, raising aggregate demand

Jacobson, Leeper, Preston (2016)
U.S. Unbacked Fiscal Expansion

Primary surplus to real GDP in percent. CPI, 100=1926. Sources: various Annual Reports of the Treasury, various monthly Treasury Bulletins, NBER Macrohistory Database, CRSP, Measuring Worth. Jacobson, Leeper, Preston (2016)
Leaving the Gold Standard

- Lesson for today: policymakers in the US could have chosen not to reinflate
  - Many countries today choose not to reinflate as did France and the UK in the 1930s
- Departing gold was “regime change” rather than shift in “policy dogmas” from balanced budgets to a belief in deficits (contrast to Eggertsson)
- Preliminary theoretical results of price level determination under the gold standard hinge on how the gold cover ratio is modeled
- Gold cover ratio: statutory requirement that every Federal Reserve bank maintain 35% gold or lawful money against deposits and 40% of gold against FRS notes in circulation
- Fixed gold cover ratio
  - Government cannot vary the money supply independently of the monetary gold stock
  - With the price of gold pegged, the price level depends on all shocks, particularly shocks to gold supply and demand
  - Fiscal and monetary policy must be passive
- Gold cover ratio as a function of endogenous variables
  - Possible for either monetary or fiscal policy to determine the price level
  - May require fluctuations in the cover ratio unlike those observed
Surprise Gains and Losses on Debt (Sims (2013))

\[
(P_t^M B_t^M (1 - \tilde{\pi}_t) + S_t - (1 + r_{t-1})P_{t-1}^M B_{t-1}^M) / P_t^M B_t^M
\]

- \(P_t^M B_t^M\): Market value of US debt
- \(\tilde{\pi}_t\): Inflation forecast error \((\pi_t - \pi_{t-1})\), where \(\pi_t\) is the log difference of the CPI
- \(S_t\): Primary surplus
- \(r_t\): One-year interest rate on Treasuries

<table>
<thead>
<tr>
<th>Correlation of Surprise Gains and Losses with Components</th>
<th>Gold standard (2/1929-3/1933)</th>
<th>After gold standard (4/1933-12/1936)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(P_t^M B_t^M)</td>
<td>0.3237</td>
<td>0.1726</td>
</tr>
<tr>
<td>(\tilde{\pi}_t)</td>
<td>-0.4175</td>
<td>-0.4093</td>
</tr>
<tr>
<td>(S_t)</td>
<td>0.0953</td>
<td>0.3610</td>
</tr>
<tr>
<td>(r_t)</td>
<td>-0.3597</td>
<td>-0.0780</td>
</tr>
<tr>
<td>((P_t^M B_t^M / P_t) / B_t)</td>
<td>0.3317</td>
<td>-0.1154</td>
</tr>
<tr>
<td>(S_t / (P_t^M B_t^M / P_t))</td>
<td>0.0975</td>
<td>0.4085</td>
</tr>
</tbody>
</table>

Sources: BLS, Eggertsson (2008), *Annual Reports of the Treasury*, various monthly Treasury Bulletins, NBER Macrohistory database, CRSP.

*Graph* Jacobson, Leeper, Preston (2016) Fiscal Inflation in 1933
Calculation of Revaluation Effects

Par value of all outstanding debt at $t - 1$: $B_{t-1} = \sum_{j=0}^{\infty} \sum_{i=1}^{N} B_{i,t-1}(t+j)$

Where $i = 1, \ldots, N$ are the securities that mature in $t + j$

And $j = 0, \ldots, \infty$ are all possible maturities in month $t - 1$

Let:

$$\mu_{jt} \equiv \frac{B_{t-1}(t+j)}{B_{t-1}} = \frac{\sum_{i=1}^{N} B_{i,t-1}(t+j)}{B_{t-1}}, \quad \text{where} \quad \sum_{j} \mu_{jt} = 1$$

Let the market value of debt be defined as:

$$P_{M}^{t} B_{M}^{t} = \sum_{j=0}^{\infty} B_{t}(t+j)N^{-1} \sum_{i=1}^{N} Q_{i,t}(t+j)\mu_{jt}$$

Where $P_{t}^{M} \equiv \sum_{j=0}^{\infty} N^{-1} \sum_{i=1}^{N} Q_{i,t}(t+j)\mu_{jt}$

Let weighted real returns from holding the portfolio of zero coupon bonds be given as:

$$r_{M}^{t} \equiv \frac{R_{M}^{t}}{\pi_{t}} = \sum_{j=0}^{\infty} \frac{Q_{t}(t+j)/P_{t}}{Q_{t-1}(t+j)/P_{t-1}} \frac{Q_{t-1}(t+j)B_{t-1}(t+j)}{P_{t-1}^{M}B_{t-1}^{M}}$$

Then the surprise component in real returns on the bond portfolio can be given as:

$$\eta_{t}^{M} \equiv r_{t}^{M} - E_{t-1}r_{t}^{M} = \sum \left( \frac{Q_{t}(t+j)/P_{t}}{Q_{t-1}(t+j)/P_{t-1}} - 1 \right) \frac{Q_{t-1}(t+j)B_{t-1}(t+j)}{P_{t-1}^{M}B_{t-1}^{M}}$$
Conclusion/Questions

- Can an unbacked fiscal expansion of the size engineered by Roosevelt quantitatively account for the increase in the price level and economic recovery in the spring of 1933?

- Going off gold allowed fiscal policy to pursue goals other than debt stabilization and allowed monetary and fiscal policy to determine the price level
  - Other equally plausible alternative explanations?

- Departure from the gold standard allowed inflationary fiscal policies
  - How important is modeling int’l gold flows for the unbacked fiscal expansion story?
  - What determined gold cover ratio policies?
  - Did Roosevelt’s backtracking on fiscal expansion contribute to the recession of 1937-1938?

- Contrasting the US to the UK and France
  - Weaker recoveries because they did not take full advantage of their policy latitude once departed from the gold standard?
References


Unemployment Rate

Source: NBER Macrohistory database

Jacobson, Leeper, Preston (2016)
U.S. Short Term Interest Rates

U.K. abandons gold

1 Year

U.S. abandons gold

3 Month

Dollar/pound exchange rate (right axis)

Sources: Cecchetti (1998), Eggertsson (2008), and Banking and Monetary Statistics, 1914-1941 (1943)

Jacobson, Leeper, Preston (2016)

Fiscal Inflation in 1933
US and UK Recoveries


Jacobson, Leeper, Preston (2016)
Gold Cover Ratio

### Roosevelt’s “Balanced” Budget

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>1934</th>
<th>1935</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total receipts</td>
<td>$3,116</td>
<td>$3,800</td>
</tr>
<tr>
<td>Total expenditures (excluding debt retirement)</td>
<td>$6,745</td>
<td>$6,802</td>
</tr>
<tr>
<td>Regular</td>
<td>$3,084</td>
<td>$3,733</td>
</tr>
<tr>
<td>Recovery &amp; Relief</td>
<td>$3,661</td>
<td>$3,002</td>
</tr>
<tr>
<td>Net deficit (total expenditures)</td>
<td><strong>$3,629</strong></td>
<td><strong>$3,002</strong></td>
</tr>
</tbody>
</table>

Millions of dollars. Source: Stein (1969)
Surprise Gains and Losses on Debt (Sims (2013))

Proportion of market value. Sources: BLS, Eggertsson (2008), Annual Reports of the Treasury, various monthly Treasury Bulletins, NBER Macrohistory database, CRSP

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Jacobson, Leeper, Preston (2016)